WHAT IS CLAIMED IS:

1. An integrated circuit comprising an interconnect structure, wherein a process of forming said interconnect structure comprises a method for forming a patterned hard mask layer in an organic polymer film, said method comprising the steps of:

fluorinating a part of the organic polymer film, thereby forming a fluorinated part, said fluorinated part forming a first hard mask layer;

forming a patterned second hard mask layer on said film;

patterning said first hard mask layer using said patterned second hard mask layer as a mask, thereby foring a patterned first hard mask layer;

removing said second hard mask layer; and

etching said organic polymer film using said patterned first hard mask layer as a mask, wherein at least a part of said first hard mask layer is retained as a dielectric layer.

2. The integrated circuit as recited in Claim 1, wherein said organic polymer film comprises an organic polymer having at least one phenyl group.

- 3. The integrated circuit as recited in Claim 2, wherein said organic polymer film is selected from the group consisting of benzocyclobutarenes, poly arylene ether, aromatic hydrocarbon, and polyimides.
- 4. The integrated circuit as recited in Claim 1, wherein the fluorinating step is performed in an ambient comprising fluorine without substantially changing the thickness of said organic polymer layer.
- 5. The integrated circuit as recited in Claim 4, wherein said fluorine is generated from a source selected from the group consisting of NF₃, SF₆, CIF₃, F₂, XeF₂, and C_xF_y , with x and y being positive whole numbers greater than zero.
- 6. The integrated circuit as recited in Claim 1, wherein said second hard mask layer is selected from the group consisting of oxides, nitrides and oxynitrides.
- 7. An integrated circuit comprising an interconnect structure, wherein a process of forming said interconnect structure comprises a method for patterning an organic polymer layer, said method comprising the steps of:

defining at least one first region and at least one second region in an organic polymer film formed on a substrate, said first region being uncovered and

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said second region being covered with a layer forming a diffusion barrier for fluorine;

exposing said first and said second region to an ambient comprising fluorine resulting in the fluorination of at least a part of said first region, thereby forming a fluorinated part;

removing said layer; and

selectively removing at least a part of said second region by etching, using said first region as a mask, wherein at least a part of said fluorinated part is retained as a dielectric layer.

- 10 8. The integrated circuit as recited in Claim 7, wherein said organic polymer film comprises an organic polymer having at least one phenyl group.
 - 9. The integrated circuit as recited in Claim 8, wherein said organic polymer is selected from the group consisting of benzocyclobutarenes, poly arylene ether, aromatic hydrocarbon, and polyimides.
 - 10. The integrated circuit as recited in Claim 7, wherein said layer forming a diffusion barrier for fluorine is selected from the group consisting of resists, oxides, nitrides and oxynitrides.

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